THE TRANSFORMATION OF RECONNAISSANCE: WHO WILL FIGHT
FOR INFORMATION ON THE FUTURE BATTLEFIELD?

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CURTIS D. TAYLOR, MAJ, USA
B.S., United States Military Academy, West Point, NY, 1994

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Current Army force redesign efforts seek to fundamentally change the way tactical commanders conduct reconnaissance on the future battlefield. Cavalry organizations will replace their traditional combat capability with a surveillance capability. This raises a fundamental question about the nature of effective reconnaissance operations. Is close combat with the enemy an essential part of effective reconnaissance? Do combat formations still have to fight for information or do modern surveillance technologies change this paradigm? This research project seeks to answer this question through a qualitative analysis of soldier interviews following Operation Iraqi Freedom (OIF). The study conclusively determines that the rapid tempo of modern warfare rendered lightly armored scout units virtually ineffective. In addition, the fluid, unconventional nature of the enemy seriously hampered the effectiveness of aerial surveillance platforms. Most commanders had to fight for the information they needed by engaging in close ground combat with their most survivable weapons platforms. These conclusions strongly suggest that Army reconnaissance units must maintain a robust combat capability if they will continue to support high-tempo offensive operations against an adaptive enemy.

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Name of Candidate: MAJ Curtis D. Taylor

Thesis Title: The Transformation of Reconnaissance: Who Will Fight for Information on the Future Battlefield?

Approved by:

_____, Thesis Committee Chair
LTC Michael Prevou, M.M.A.S.

_____, Member, Consulting Faculty
COL Jerry D. Jorgensen, Ph.D.

_____, Member
George J. Mordica II, M.A.

_____, Member
Donald S. Stephenson, M.A.

Accepted this 8th day of April 2005 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, Ph.D.

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ABSTRACT

THE TRANSFORMATION OF RECONNAISSANCE: WHO WILL FIGHT FOR INFORMATION ON THE FUTURE BATTLEFIELD? by MAJ Curtis D. Taylor, 82 pages.

Current Army force redesign efforts seek to fundamentally change the way tactical commanders conduct reconnaissance on the future battlefield. Cavalry organizations will replace their traditional combat capability with a surveillance capability. This raises a fundamental question about the nature of effective reconnaissance operations. Is close combat with the enemy an essential part of effective reconnaissance? Do combat formations still have to fight for information or do modern surveillance technologies change this paradigm? This research project seeks to answer this question through a qualitative analysis of soldier interviews following Operation Iraqi Freedom (OIF). The study conclusively determines that the rapid tempo of modern warfare rendered lightly armored scout units virtually ineffective. In addition, the fluid, unconventional nature of the enemy seriously hampered the effectiveness of aerial surveillance platforms. Most commanders had to fight for the information they needed by engaging in close ground combat with their most survivable weapons platforms. These conclusions strongly suggest that Army reconnaissance units must maintain a robust combat capability if they will continue to support high-tempo offensive operations against an adaptive enemy.

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ACRONYMS

ARS   Armed Reconnaissance Squadron

BCT   Brigade Combat Team

BFSB   Battlefield Surveillance Brigade

BMP   Bronevaya Maschina Piekhota

BRT   Brigade Reconnaissance Troop

CALL   Center for Army Lessons Learned

CFLCC   Combined Forces Land Component Command

CMTC   Combined Maneuver Training Center

CTC   Combat Training Center

FM   Field Manual

HMMWV   High-Mobility Multipurpose Wheeled Vehicle

HUMINT   Human Intelligence

ITV   Improved TOW Vehicle

JRTC   Joint Readiness Training Center

LRASS   Long-Range Advanced Scout Surveillance System

NCW   Network-Centric Warfare

NTC   National Training Center

OIF-SG   Operation Iraqi Freedom Study Group

PIR   Priority Intelligence Requirements

RPG   Rocket-Propelled Grenade

SIGINT   Signals Intelligence

UAV   Unmanned Aerial Vehicle

UE(X)   Unit of Employment (X)

ILLUSTRATIONS

CHAPTER 1

INTRODUCTION

> The whole art of war consists of getting at what lies on the other side of the hill, or in other words, what we do not know from what we do know. (Longford 1969, 295)
>
> The Duke of Wellington

<u>Aggressive versus Passive Reconnaissance</u>

Throughout the history of warfare, military commanders have recognized the need to conduct reconnaissance of the enemy and the terrain ahead of their formation. To that end they have employed both passive and active means. Passive reconnaissance methods seek to gain information on the enemy without exposing the reconnaissance asset or even indicating to the enemy that he is under surveillance. The focus is on stealth and security. Direct fire contact is to be avoided at all costs. This method can be very effective and is often an essential prerequisite to decisive maneuver operations. It does, however, have limitations.

The greatest problem with stealthy reconnaissance is that it can be painfully slow. First, the observer must infiltrate through the enemy's security to gain observation of the reconnaissance objective. Regardless of the scout platform used, this infiltration always takes time. Second, once the scout is in position, he must now attempt to discern the enemy's capabilities and intentions by observation alone. This also has proven extremely time consuming, especially in situations where the enemy may be well concealed among his surroundings. In fact, there are many cases where the scout or the spy cannot get into a position to observe the enemy without undue risk or where the tempo of operations

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precludes a deliberate and prolonged reconnaissance effort. In those cases, armies have had to fight for information using aggressive reconnaissance.

Over the centuries, different types of organizations have performed this aggressive reconnaissance function. Some militaries have regarded aggressive reconnaissance as one of several missions that may be performed by general-purpose maneuver formations. For example, the Soviet doctrine of the Cold War era employed tank and infantry platoons of the lead echelon battalions as combat reconnaissance patrols. The mission of these patrols was to find points of weakness along the enemy front through aggressive probing (Simonyan and Grishin 1980, 150). More often, military commanders have trusted the aggressive reconnaissance mission to specially equipped and trained forces. In most cases, these specially equipped formations are known as heavy cavalry or, more recently, armored cavalry.

The United States Army has long recognized the importance of both types of reconnaissance and sought to keep the battlefield commander resourced with a broad spectrum of reconnaissance capabilities that enable close combat when necessary. Beginning with Brigadier General Casimer Pulaski's creation of a dedicated and highly mobile horse cavalry at Valley Forge in 1777, the US Army has maintained specialized forces to conduct the aggressive reconnaissance (Loescher 1977, 148). Since the advent of mechanized warfare in the twentieth century, these specialized formations have existed primarily at the corps and division level. Commanders at the brigade level and below have relied on a combination of stealthy reconnaissance units (typically battalion scout platoons) and their own general-purpose forces to meet their unique reconnaissance needs.

The dramatic transformation of Army organization and doctrine currently underway seeks to change this paradigm. Under the new Future Force design, the traditional roles of a corps and a division are merged into a new organization known as the "unit of employment X" (UEx). This UEx serves as the primary tactical war-fighting headquarters (Task Force Modularity 2004, 1-32). Reconnaissance units are found at three levels of command within the UEx--the battalion scout platoon, the armed reconnaissance squadron (ARS), and the battlefield surveillance brigade (BFSB). All three of these organizations are specifically designed and equipped to execute passive reconnaissance only. According to this new design, aggressive reconnaissance will become the mission of general-purpose maneuver units in the combined arms battalion (Task Force Modularity 2004, 7-45). The importance of this change in battlefield organization is enormous. For the first time since Valley Forge, the US Army will possess no specialized tactical formation to conduct aggressive reconnaissance.

Statement of the Problem

The new Army modular force design seeks to replace the combat capability of traditional cavalry organizations with a surveillance capability. This decision is founded on the idea that modern surveillance technology has enabled reconnaissance units to collect information through observation that once could only be gained by fighting. Testing the validity of this hypothesis will be the primary focus of this research project.

Background of the Problem

Under the Army of Excellence force design, specialized armored cavalry formations were the primary reconnaissance asset of division and corps commanders. These formations possessed three key attributes: (1) combined arms at the company level;

(2) enhanced logistics and communications suites; and (3) organic dismounted, mounted, and aerial reconnaissance assets (Field Manual 17-95 1996, chapter 1).

This unique design allowed the organization to fight forward of the friendly main body and beyond supporting distance of other maneuver forces if necessary. Most importantly, the divisional and corps cavalry units were optimized to conduct aggressive reconnaissance. Passive reconnaissance using dismounted scouts or light helicopters was always a lesser-included capability in the organization. However, the primary mission and the primary focus of the unit's training was maintaining ability to fight for information (Field Manual 17-95, chapter 1).

This force design was based on several enormously important assumptions about the nature of modern combat. First, force designers assumed that tactical commanders from company through corps must have the flexibility to gather combat information through stealth or through force depending on the situation. Second, corps and division-sized formations require a specially equipped and trained unit to perform this function.

The Future Force design has taken a very different approach to this tactical problem. The specialized reconnaissance assets at the brigade combat team (BCT) and UEx level (the armed reconnaissance squadron, and the battlefield surveillance brigade respectively) are specifically designed to employ only passive means of reconnaissance (Task Force Modularity 2004, 7-45). This change is based, in part, on a growing faith in the ability of sensor platforms to detect and anticipate enemy actions. If modern sensors can acquire and track the enemy continuously, the UEx or BCT commander can conduct decisive maneuver without first gaining contact with and fixing the enemy. This

development is a natural result of a gradual intellectual shift in the Army and the larger

joint force that has been going on for several years.

Known most commonly as network-centric warfare, this body of thought is based

on a revolutionary hypothesis about the ability of technology to transform warfare.

Advocates of this new revolution argue that modern passive reconnaissance platforms

like the satellite and the unmanned aerial vehicle (UAV) will provide an unprecedented

level of tactically relevant information on the enemy. Ubiquitous information networks

will assimilate this information with unprecedented speed resulting in a very accurate and

timely picture of the enemy situation. Those networks will then distribute that

information down to the lowest tactical level enabling commanders at all levels to

conduct decisive operations against the enemy without having to first locate him through

aggressive action (US Department of Defense 2001, 4-3).

This change represents a significant shift in theoretical thought within the Army.

The "movement to contact" where an army marches forward with only a limited

knowledge of when or where it will make enemy contact has been an unavoidable reality

of military operations since Alexander the Great. If information technologies can safely

free the Army from this burden, it can enjoy enormous savings and efficiencies. Weapon

systems can become much lighter because a modern force can choose the time and

location of engagement with the enemy and avoid exposure to heavier firepower. Units

can be much smaller and hence more agile because they no longer need to "siphon off"

precious combat power to protect against enemy attacks at an unexpected location.

> Information technologies will enable the Objective Force to accelerate the
> decision-making process and act quickly and decisively to strike key enemy
> capabilities and exploit his vulnerabilities. Information technologies will enable

leaders to conduct parallel, collaborative planning which in turn provides more time for subordinate elements to develop the situation out of contact with the enemy. Advanced technologies act as combat multipliers to increase situational awareness and allow commanders to strike a decisive lethal blow at a time and place of their choosing. (Riggs 2002)

Under this new construct, the delicate balance between passively collecting intelligence and fighting for it tips decidedly in favor of passive reconnaissance. If modern sensor technology and information sharing networks can acquire and track the enemy from a distance, then the uncertainty about the enemy's capabilities and intentions that has plagued battlefield commanders for centuries is safely eliminated.

Traditional cavalry organizations have always served as a hedge against uncertainty on the battlefield. They have fought for information about the enemy's strengths and vulnerabilities and they have protected the friendly main body from the enemy's reconnaissance or from unexpected attack. If technology can eliminate or dramatically reduce this uncertainty, it has a profound impact on the requirement for robust cavalry organizations. If passive reconnaissance can provide a commander all the needed information needs to conduct "decisive maneuver" against an enemy formation, then a suite of surveillance platforms from satellites to UAVs can replace the traditional cavalry missions that used to be performed by a combination of tanks, armored scout vehicles, and light helicopters. The Army's decision to replace the combat capability in our tactical cavalry organizations with a surveillance capability indicates that this assumption is fundamentally reshaping the Future Force. But before declaring a new era in warfare and replacing all the tanks in our reconnaissance forces with UAVs, it is prudent to examine very carefully the fundamental assumptions that lead to such a sweeping conclusion.

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Previous attempts to transform the military based on emerging technologies had to rely primarily on the forecasts of military theorists and the results of staged field tests and experiments rather than on real world experience. In many of these cases, the tendency has been to place too much faith in the power of technology and too little in the persistence of friction on the real battlefield.

History has shown that overly optimistic assumptions about the power of technology to change warfare can have enormous consequences. In the early decades of the twentieth century, airpower enthusiasts, like Giulio Douhet and Billy Mitchell, optimistically predicted a day when strategic bombing would become the decisive means of conflict resolution. Although Douhet and Mitchell differed slightly in their views, both argued that the strategic use of airpower against enemy infrastructure and moral centers would inflict sufficient suffering on an enemy population to force his complete collapse without the need to defeat his army in the field (Douhet 1921, 283 and Mitchell 1921, 427).

In 1943, the US Army Air Corps took this broad philosophical concept and translated it into an operational plan to defeat the Axis airpower prior to the planned invasion of the European continent. Named Operation Pointblank, the plan was to execute sustained, high-altitude, daylight, precision bombing against German factories in the hopes that this would degrade the Axis aircraft manufacturing capability and eventually lead to complete Allied air supremacy of the Continent. The Eighth US Air Force based out of England executed Operation Pointblank throughout the summer and fall of 1943 with very mixed results. In one of its largest raids against the ball-bearing plants in Schweinfurt and Regensburg on 17 August 1943, the Allies lost sixty out of 315

bombers and inflicted only minor damage on either plant. Undeterred, the Eighth Air Force renewed their efforts with a major offensive in October that culminated with another disastrous raid on Schweinfurt in 14 October that resulted in sixty lost and 138 damaged B-17s out of 291 that flew in the mission. Throughout the operation the monthly attrition rate for B-17s was about 30 percent. Only 14 percent of the original crews survived the full twenty-five missions required to allow them to rotate home. The rest were killed, wounded, or psychologically incapacitated (Carey 1998).

The American concept of daylight precision bombing did not fail because it was poorly planned or executed or because pilots lacked the training or proper equipment. It failed because it was based on a faulty premise about the ability of technology to change the rules of warfare (Carey 1998). The airpower theorists in the Army Air Corps had made an *a priori* assumption that daylight precision bombing would decisively cripple the moral and industrial capacity of the Nazi war machine. When continued battlefield reports challenged that assumption, they were unwilling to abandon it.

More importantly, the Army Air Corps failed to consider that they enemy would adapt to their approach and fight hard to deny them the advantages brought by precision bombing. Indeed, the Luftwaffe fought very hard to maintain air superiority over continental Europe in the face of the bombing threat. It was only after the Allies discovered that they needed to fight for this critical capability by escorting their bomber fleets with fighters that they began to experience any measure of success.

Fortunately, the Army today has a great advantage that the Army Air Corps lacked in 1943--contemporary battlefield experience. Since 11 September, 2001 the US Army has been engaged in conflicts all over the globe. These operations have provided

an enormous amount of anecdotal information in which to thoroughly field test any new warfighting hypothesis. In military operations in both Iraq and Afghanistan, the Army has employed highly sophisticated surveillance technology and modern intelligence fusion techniques against a thinking and adaptive enemy. This enemy has ranged from traditional Cold War-style tank divisions to amorphous terrorist networks. If this modern technology has reduced battlefield uncertainty for the tactical commander, the evidence for it should be overwhelming.

With this in mind, this research will attempt to critically test the Army's hypothesis emerging in the Future Force design that the combat capability of traditional cavalry organizations can be replaced by a passive surveillance capability. This hypothesis is built on the assumption that modern surveillance technologies dramatically reduce uncertainty and render the combat forces in these organizations obsolete. The ample battlefield experience in the opening months of Operation Iraqi Freedom provides an ideal real-world environment in which to field test this hypothesis. Specifically, this research project will examine the large volume of interviews and after-action reports collected by the Operation Iraqi Freedom Study Group covering the initial invasion and defeat of the Ba'athist regime in Iraq to determine if the evidence available supports the notion that surveillance platforms have reduced battlefield uncertainty.

<div align="center">Assumptions</div>

This research assumes that Operation Iraqi Freedom between March and May 2003 serves as a valid test case for future military conflicts. While no two conflicts are the same, the fight against both the conventional and unconventional forces in Iraq offered a broad sampling of the types of high-intensity combat situations that US forces

might encounter in the next two decades or so. The widespread tactical incompetence displayed by Iraqi President Saddam Hussein's conventional forces in both this conflict and the Gulf War indicate that, if anything, Operation Iraqi Freedom represented the low end of the spectrum of threats that US forces may contend against in the near future.

Limitations

Modern cavalry organizations perform three critical functions for the maneuver commander: (1) aggressive reconnaissance, (2) security, and (3) economy of force (*Field Manual 17-95*, 1-1). This thesis will focus primarily on the first of these functions--the type of capability that a maneuver commander needs to perform aggressive reconnaissance. It is important to note this critical limitation of the research effort. A similar investigation is warranted into the commander's security and economy of force requirements.

Key Terms

Reconnaissance is the pursuit of the commander's priority intelligence requirements (PIR). In other words, it is an operation whose focus is to answer critical questions for the commander to execute his tactical plan. Those questions may pertain to the enemy, the terrain and infrastructure, or the civilian population. This definition distinguishes reconnaissance from the separate process of target acquisition. Although the same unit or platform often performs both activities, they are fundamentally different. Target acquisition provides precise information to support a targeting decision that may or may not have immediate relevance to the tactical plan. Pure reconnaissance, on the other hand, is focused exclusively on the acquisition of information the commander needs to maneuver his forces on the battlefield.

Passive or stealthy reconnaissance is a method of information collection that seeks to avoid direct contact with or discovery by the enemy. The intent is to infiltrate the enemy's battle space and gain visual contact with key pieces of his formation or the infrastructure on which his formation is operating. The battalion scout platoon, the reconnaissance satellite, and the UAV all perform passive reconnaissance.

Aggressive reconnaissance seeks to gain direct fire contact with the enemy (if the information requirements are enemy oriented) or seeks to establish combat presence in an area in order determine if enemy forces are present (if the information requirements are terrain oriented). This mission is typically performed by specialized cavalry organizations. Current army doctrine also refers to this type of operation as a reconnaissance in force (*Field Manual 3-90*, 13-39). The fundamental difference between passive and aggressive reconnaissance is that aggressive reconnaissance seeks to understand the enemy by forcing him to respond to some friendly action. This often forces the enemy to reveal both his capabilities and his intentions-- information that would be difficult to gather through direct observation alone. Since aggressive reconnaissance does not rely as heavily on stealth or on extended periods of observation, it can occur at a much faster tempo than a surveillance operation. The obvious drawback of aggressive reconnaissance is that it makes no secret of the reconnaissance effort and thereby forfeits the advantage of tactical surprise.

CHAPTER 2

REVIEW OF LITERATURE

This literature review is presented in two parts. The first part presents a broad overview of significant literature and historical accounts of the roles and capabilities of reconnaissance forces. The primary focus of this review is on US military operations since the dawn of mechanized warfare in the twentieth century. The second part of the review will examine the emerging schools of thought on the future nature of reconnaissance operations.

Classical Theorists

The role of reconnaissance on the battlefield has been a topic of both research and debate since the invention of the written word. Sun Tzu was perhaps the first author to comment at length on the importance of military reconnaissance in his famous work, *The Art of War*. Authors have used Sun Tzu's famous dictum from chapter three for centuries to punctuate the critical link between good intelligence and victory. "Know your enemy and know yourself; in a hundred battles, you will never be in peril" (Sun Tzu 1963, 84).

Perhaps less known, Sun Tzu discusses reconnaissance in greater depth later in his work in chapter seven:

> Therefore, determine the enemy's plans and you will know which strategy will be successful and which will not; Agitate him and ascertain the pattern of his movement. Determine his dispositions and so ascertain the field of battle. Probe him and learn where his strength is abundant and where deficient. (1963, 100)

This discourse indicates that Sun Tzu envisioned reconnaissance as a combat operation undertaken after the general had studied and formulated a hypothesis about the enemy. He believed it was necessary to "agitate" the enemy in order to understand his

plans and to "probe" him in order to see how he would fight. Sun Tzu indicates here that passive means of observation alone are not sufficient to really understand one's opponent. Some active agitation is required in order to test and understand the enemy's reaction and so determine his strength and his intent.

Also evident here is the beginning form of a theory known today as "reconnaissance pull" (Lind 1985, 18). Advocates of reconnaissance pull argue that a commander should develop a loose set of possible maneuver options and then allow scouts to "pull" the main formation through the enemy by probing for weaknesses and bypassing strengths. The admonition to conduct "probing attacks" to "learn where his strength is abundant" follows this theory closely.

Carl von Clausewitz in his famous work *On War* indicated that the threat of combat was often the most effective way to get the enemy to reveal his position or intention. "The enemy who wants to reconnoiter must act as if he were about to attack and defeat or dislodge our forces" (Clausewitz 1984, 237). Hence a good reconnaissance often involved bringing the enemy into a "sham fight" where he would be forced to reveal his strength while his opponent could keep his main force concealed.

Clausewitz's greatest contribution to the reconnaissance debate, however, was not his specific discussion of the role of reconnaissance forces in eighteenth-century Europe but his more esoteric discussion on the nature of war itself. Throughout his treatise, Clausewitz sought to emphasize the point that "war on paper" (Clausewitz 1984, 119) is fundamentally different from the real battlefield. In other words, the theoretical capabilities of weapon systems or forces are often radically different from their practical limitations on the modern battlefield. Although Clausewitz is often quoted as saying that,

"war is merely the continuation of policy by other means" (1984, 87), this statement is a gross simplification of his overall view on warfare. Clausewitz saw warfare as a far more sophisticated phenomenon. The execution of state policy played only a minor part.

> As a total phenomenon its dominant tendencies always make war a paradoxical trinity--composed of primordial violence, hatred, and enmity, which are to be regarded as a blind natural force; of the play of chance and probability within which the creative sprit is free to roam; and of its element of subordination, as an instrument of policy, which makes it subject to reason alone. (Clausewitz 1984, 89)

Clausewitz's well-known discussion of fog and friction in war all derive from this fundamental belief that warfare is more than the collision of interstate policies and the confrontation of armies on the battlefield. Warfare, according to his construct, is a very human endeavor whose outcome often depends more on issues of human psychology and behavior than on strict calculations of force sizes and exchange ratios. It is likely that Clausewitz would be frustrated today with the use of the computer simulation as a method of force design just as he expressed frustration with his contemporaries who sought to describe warfare at its theoretical limits.

Antoine Herni Jomini was a contemporary of Clausewitz and another astute observer of the nature of modern warfare. While Clausewitz sought to understand the essence of warfare, Jomini sought to establish its basic principles and explain them to his readers. Jomini discusses the utility of good reconnaissance in some depth towards the end of his book. He stresses the importance of gaining good information on the enemy prior to a fight and then lists four major means for gathering that information. "The first is a well-arranged system of espionage; the second consists in reconnoissances [sp] made by skillful officers and light troops; the third, in questioning prisoners of war; the fourth, in forming hypotheses of probabilities" (Jomini 1947, 141). His work then expounds

extensively on this final idea of "forming hypotheses." He does not specifically discuss

the modern concept of fighting for intelligence in his book but seems to prefer the use of

light reconnaissance observers and spies.

As these early works indicate, reconnaissance operations have been a crucial part

of military operations for centuries. A detailed analysis of this extensive history is beyond

the scope of this research. Instead, this review will focus on the design and employment

of reconnaissance units in the US Army since the advent of mechanized warfare in the

twentieth century.

<u>American Reconnaissance in the Mechanized Era</u>

American Cavalry in the Second World War

In 1995, Lieutenant Colonel Louis DiMarco published a thesis which examined

the evolution of American cavalry doctrine in the interwar period and how that doctrine

changed after reconnaissance forces were introduced into combat in North Africa and the

European continent in 1943. Entitled, "The US Army's Mechanized Cavalry Doctrine in

WWII," his thesis analyzed the transition that occurred in reconnaissance theory from the

pre-war years of a peace-time Army through the bloody crucible of combat against

highly-trained German forces. His thesis offers a great historical insight into the way in

which peace-time theories that work well in training exercises often prove far more

difficult to execute in combat.

As the US Army endured the major transformation from a horse and foot-bound

force to a mechanized one in the 1920s and 1930s, its cavalry formations developed a

kind of identity crisis. For centuries, cavalry had been a collection of missions built

around a platform--the horse.   Now with the platform no longer viable, what would

become of the collection of missions that the horse had fulfilled? Emerging doctrine in the pre-war period envisioned mechanized and motorized cavalry as primarily a reconnaissance force. Other traditional horse cavalry missions, such as delay, exploit, and attack were left to the other branches and the emerging armored corps. These mechanized reconnaissance forces were designed to acquire information primarily through stealth. Fighting for information was not considered a core cavalry task. In fact, tanks were eliminated from the pre-war mechanized cavalry squadrons because they were considered too large, noisy, and limited in their operating range (DiMarco 1995, 5).

In 1933, the Army fielded the first fully mechanized cavalry organization--the First Cavalry Regiment (Stubbs and Conner 1984, 56). This organization consisted primarily of lightly armored cars equipped with submachine guns and rifles. Like the emerging armed reconnaissance squadron of the future force design, the armored car units of the First Cavalry Regiment were specifically designed not to fight. The publication of Field Manual 2-10, *Cavalry Field Manual, Volume 2, Mechanized Cavalry* (1941) reinforced this view by emphasizing the importance of stealthy mounted and dismounted reconnaissance and the necessity of avoiding enemy contact (DiMarco 1995, 22).

It was upon this doctrinal basis that the first mechanized cavalry formations marched to war in early 1943 equipped with jeeps and armored cars. The 81st Armored Reconnaissance Battalion and the 91st Cavalry Reconnaissance Squadron were among the first to see combat in Operation Torch in North Africa. While both organizations had been trained and equipped to conduct passive reconnaissance missions only, both repeatedly found themselves in intense direct fire fights with German forces. Stealthy

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infiltration became unfeasible in open terrain against a well-positioned enemy. Key

terrain that provided effective observation had to be fought for or defended once seized.

Additionally, commanders desperately needed a force capable of providing them the

early warning that traditional cavalry units had performed in the previous century. As a

result, both the 81st and 91st spent a lot more time fighting for information and

conducting traditional security operations than either their training or equipment prepared

them for. The greatest lesson of the North Africa campaign was that direct combat was

virtually unavoidable if a reconnaissance force was to be effective at all. Time and again,

field commanders were forced by the tactical situation to employ these lightly armored

reconnaissance organizations in situations that required combat with heavy German

forces. A second key lesson learned was that reconnaissance troops could not survive

without armor support--in this case the M3 Stuart light tank. The 81st Armored

Reconnaissance Battalion discovered this shortfall and quickly attached tank platoons to

each of its cavalry troops. Compiling his observation of the North Africa campaign,

Major General Charles Scott, commander of the Armor Replacement Center commented

in the *Cavalry Journal* in November 1942,

> In this day and age, long distance reconnaissance must be organized to fight in execution of its mission, to fight for time to send information in, and to fight for time for the main body to properly utilize the information sent in. . . . Reconnaissance capable of only observation is not worth the road space it takes. (DiMarco 1995, 58)

Following World War II, the Army compiled its key lessons learned from cavalry

operations into General Board Report Study Number 49, "Mechanized Cavalry Units"

published in 1945. This report reaffirmed the notion that effective reconnaissance almost

always required fighting--except in those rare cases where the commander had the time to conduct an effective stealthy infiltration operation (DiMarco 1995).

The Korean War

In 1954, Major General James M. Gavin published a short paper in *Armor Magazine* entitled, "Cavalry and I Don't Mean Horses." Major General Gavin served as division commander of the 82nd Airborne Division in World War II and participated in airborne operations in Sicily and Normandy. In his paper, Gavin lays blame for much that went wrong in the Korean war on the failure of the US Army to equip and field adequate cavalry organizations that could effectively screen forward of the main body of conventional forces. Specifically, he argues that the Army should have employed a cavalry formation to delay the initial advance of the North Korean Army to the Pusan perimeter. Second, he contends that if effective cavalry forces had screened the flanks and front of X Corps in December of 1950, the Chinese would have been unable to successfully infiltrate into South Korea without detection and achieve such stunning success in the initial days of their attack. In short, Gavin argues that the lack of a robust cavalry organization that possessed superior mobility and sufficient firepower to operate independently of the main body seriously hampered the flexibility of US formations throughout the war (Gavin 1954).

The Goldsmith Studies

In 1987 and 1996, Martin Goldsmith of the RAND Corporation conducted two detailed studies of reconnaissance operations at the National Training Center (NTC) on behalf of the US Army. The studies had a profound influence on the evolution of reconnaissance doctrine, organization and equipment in the 1990s. The methodology for

both studies was to examine the outcomes of simulated battles at the NTC and attempt to correlate those outcomes with the success or failure of the reconnaissance operation that preceded it. Information for the study came from the assessments of observer-controllers collected through a detailed questionnaire and from the comments of unit participants.

Despite the nine year gap, both studies observed essentially the same trends in reconnaissance. The first study entitled *Applying the National Training Center Experience: Tactical Reconnaissance* established "a strong correlation between successful reconnaissance and successful offensive operations." In fact, this correlation was so strong that Goldsmith argued that "beginning an attack…without appropriate intelligence is apt to lead to failure" (Goldsmith and Hodges 1987, 67).

Goldsmith also concluded that stealth was an essential factor in effective reconnaissance. The 1987 study noted that the opposing forces stationed at the NTC enjoyed considerable success in reconnaissance by employing wheeled scouts, essentially visually modified HMMWVs (high-mobility multipurpose wheeled vehicle), instead of the larger, tracked BMPs based on an M113 chassis. Since these wheeled platforms consistently proved superior to the tracked platforms employed by BLUFOR (Blue Forces) scouts, the study suggested that the HWMMV may be a better reconnaissance platform. Shortly after this report, the Army made the decision to reconfigure scout platoons in pure HWMMV configuration due, in large part to the recommendation of the RAND study (Goldsmith and Hodges 1987).

This view, although fully supported by the extensive empirical evidence gathered from observing force on force battles at the NTC, was in direct contrast to the lessons learned from the North Africa campaign where commanders found that effective scouting

through stealth was a rare exception and that the best information had to be gained through combat.

Nine years later in 1996, Martin Goldsmith again looked at the reconnaissance issue at the NTC in a subsequent study entitled *Battalion Reconnaissance Operations at the National Training Center*. This study confirmed that commanders still failed to develop adequate intelligence on the enemy about 75 percent of the time and this failure was a major determining cause of overall mission failure. This conclusion was virtually identical to the data gathered a decade before. Since both Bradley and HMMWV-based scout formations were in the force at the time, Goldsmith compared them for survivability and effectiveness. Surprisingly, the study found no significant difference between the survivability of the Bradley cavalry fighting vehicle and HMMWV as a scout platform. Goldsmith theorized that this was a balanced off-set between the improved stealth of the HMMWV and survivability of the Bradley (Goldsmith 1996, 13).

Furthermore, all the data confirmed that brigade commanders suffered from the lack of a dedicated reconnaissance force and battalion commanders too often failed to properly employ their scouts (Goldsmith 1996, 16). The findings and recommendations of this second study led to the addition of a reconnaissance block of instruction at the Battalion Pre-Command Course, the creation of the Scout Platoon Leader's Course at Fort Knox, and the eventual creation of the brigade reconnaissance troops in every heavy brigade.

<div align="center">Operation Desert Storm</div>

Because Operation Desert Storm saw the first large scale employment of US heavy formations since the Korean War, it provided an excellent test case for many new

war fighting concepts that emerged during the Cold War but were, fortunately, never fully tested in the long awaited conflict with the Soviet Union. One of the most detailed examinations of the Army's performance in Operation Desert Storm is found in the six-volume report entitled *Operation Desert Storm Lessons Learned*. Often referred to as the "Tait Report" in honor of its major author, this extensive examination of the campaign highlights issues and makes recommendations on virtually every aspect of military operations. Volume four deals with the issue of ground reconnaissance specifically.

First, the "Tait Report" concludes that the divisional cavalry organizations at the time lacked the combat power to conduct their traditional roles of reconnaissance, security, and economy of force. Because tanks were not organic to the squadrons, many commanders were forced to task organize tank companies from the maneuver brigades in order to provide the division's primary reconnaissance asset with the resources that it needed to fight for information and survive on the battlefield (US Department of the Army 1992).

Second, the "Tait Report" also highlighted the acute limitations of using HMMWV mounted scouts in a reconnaissance role due to their limited survivability. While this concept had repeatedly proved successful on the laser battlefield of the National Training Center, the "Tait Report" concluded that unit commanders typically chose to pull their wheeled scouts from the front and place them on other less threatening missions rather than risk losing them.

The experience in Desert Storm reinforced the lesson of the North Africa campaign--that effective reconnaissance must often include fighting. Where commanders in the deserts of North Africa in 1943 had suffered heavy casualties employing light

reconnaissance formations to fight for information, commanders in the deserts of Kuwait in 1991 chose simply not to use them.

Operation Iraqi Freedom

At the time of this writing, less than two years have elapsed since the fall of Baghdad and the transition from offensive to stability operations in Iraq. Much remains to be written about the Army's performance in this war. Fortunately, the Center for Army Lessons Learned (CALL) and aggressive unit historians have collected and compiled a great deal of this information already.

The most significant work to date on the operation is *On Point: The US Army in Iraq*. Assembled by a team of CALL analysts led by Colonel (Retired) Gregory Fontenot, this book pieces together thousands of documents and interviews into a coherent narrative of the operation. While the CALL team did not specifically study the effectiveness of passive and aggressive reconnaissance throughout the operation, it did draw some general conclusions on this topic based primarily on interviews with participants (Fontenot, Degen, and Tohn 2004).

First, the study concluded that most tactical commanders felt that they were conducting a movement to contact in virtually every major engagement of the war. While higher echelons may have provided them with some degree of information about when and where to expect contact, it was most often insufficient for the tactical commander to develop any traditional maneuver plan until after his lead forces had made contact with the enemy (Fontenot, Degen, and Tohn 2004, 423).

A second conclusion of the *On Point* study related to the use of lightly armored reconnaissance vehicles. Throughout the campaign, commanders were extremely

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reluctant to employ their HMMWV-mounted scouts in their traditional reconnaissance missions because the enemy possessed an abundance of RPGs and large-caliber weapons that could easily destroy these lightly armored platforms (Fontenot, Degen, and Tohn 2004).

The authors suggest that the fundamental principle of employing lightly armored scouts on a high-intensity battlefield is suspect and should undergo further investigation.

> Mounted in lightly armored HMMWVs, battalion and brigade scouts are vulnerable to RPG and cannon fires. . . . As a consequence of this, if contact seemed imminent, commanders often chose not to use their scouts and brigade reconnaissance troops. In short, they elected to give up their "eyes" rather than risk losing them. Put another way, commanders chose not to employ scouts and brigade reconnaissance troops in the role for which they were intended. This phenomenon warrants study and arguably action to correct problems commanders perceived. Heavier scout vehicles may not be the answer; perhaps the answer is how reconnaissance units are trained and supported. (Fontenot, Degen, and Tohn 2004, 423)

<u>The Reconnaissance Debate in Contemporary Literature</u>

The second half of this literature review will examine the current schools of thought on the military force of the future. Most scholars will agree that the fundamental change driving military transformation at this period in history is the way in which new technology will affect the ability of combatants to collect, process, and act on information. The military transformation effort then centers on the emerging concepts of information dominance and its converse--uncertainty. Naturally, these ideas also are the focal point of considerable controversy. Most contemporary scholarly writing on this subject tends toward two broad schools of thought. In the first school are the technologists, who see great opportunity in modern technology and believe that it has the potential to fundamentally change the problem of friction for the tactical commander. Writing from this camp tends to focus on the future with supporting data drawn from

computer simulations or the projected capabilities of emerging weapons systems. In the opposing school are the traditionalists who argue that friction and uncertainty are an intractable reality of combat and technology will never be able to completely free us from it. Traditionalists tend to look to the recent past and draw supporting data from places like Mogadishu and Fallujah.

The Technologists

Currently, the most authoritative and detailed description of the technologist viewpoint is found in the Department of Defense (DOD) report to Congress entitled, *Network-Centric Warfare* presented in July 2001. This document represents the official DOD position on the emerging role that information technology will have on the US military. The fundamental thesis behind the phrase network-centric warfare (NCW) is the idea that technology allows the creation of a seamless information collection, processing, and distribution network that can dramatically multiply the combat effectiveness of any military force. In fact, this effect can be so profound that the force transitions from a "platform-centric" one where combat capability is measured in terms of discrete weapon system to a "network-centric" force where combat capability is measured as the quality of information within the network itself (US Department of Defense 2001).

Following this logic, an NCW advocate would argue that a set of reconnaissance drones digitally linked to a missile battery would be able to defeat a much larger enemy tank division, not because of the number of missiles the force contained but because of the ability of this networked force to acquire, disseminate, and act on information faster than the enemy force.

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According to the theory, NCW not only changes the lethality of networked forces but their survivability as well. Information replaces armor.

> The ability of C4ISR systems to enable Information Superiority will be the key to the support of survivability. Offensive Information Operations will directly support the Objective Force capability to maneuver out of contact, target enemy C2, and hinder the enemy's ability to gain situational understanding. Likewise counter-reconnaissance and defensive Information Operations will integrate capabilities to protect and defend friendly information and information systems. Simply put, the paradigm of See First, Understand First, Act First, and Finish Decisively acknowledges the increased lethality of the future battlefield and identifies the tasks necessary for soldiers to survive and win. (US Department of Defense 2001, 4-4)

This theory borrows heavily from the technological advances of the business world. In fact, the report contends that, "Network Centric Warfare is to warfare what e-business is to business" (US Department of Defense 2001, iii). Many businesses have recently reaped large benefits from improved information management techniques that have reduced overall risk. Another important NCW book entitled *Effects Based Operations: Applying Network Centric Warfare in Peace, Crisis, and War* cites the example of a sophisticated credit worthiness algorithm developed by Capital One that has allowed them to accurately predict which customers will have the lowest balances and highest default rates. This predictive technology has reduced the risk associated with consumer lending and offers the Capital One a significant competitive advantage (Smith 2002, 41). Applying this model to warfare, a network-centric force could use similar technologies to predict enemy action, thus allowing the deliberate and surgical application of military power without being forced to maintain excess capability as a hedge against uncertainty.

A third significant work along this line is *Lifting the Fog of War* by Admiral Bill Owens. Written in 2000 shortly after the Kosovo campaign, Admiral Owens was among

the first to argue that technology could substantially reduce or even eliminate uncertainty in warfare. Faced with an aging legacy force and a world full of emerging threats, Owens argues that the military must either face obsolescence or fundamentally change the way it fights. He argues that the military should seek to leverage the information gathering and processing tools at its disposal to fundamentally change the paradigm of traditional ground combat. He calls this new leverage "dominant battlespace knowledge."

> With dominant battlespace knowledge the US military commander will be able to discern key relationships in the enemy organization, such as the critical components of the command structure whose destruction will paralyze the enemy force, or a pivotal event in the enemy's military campaign whose disruption will upset the enemy's strategy or battle plan. (Owens 2000, 137)

The *Army Transformation Roadmap 2003* has adopted many of the ideas described in the works above and translated them into concrete principles that are influencing the design of the Future Force. Perhaps the greatest example of this is the idea that future tactical formations will, "see first, understand first, decide first, and finish decisively" (US Department of the Army 2003, 1-7). This phrase is mentioned no less than thirteen times in the Roadmap document. Known as the "quality of firsts," this idea suggests that information technologies of the future will allow commanders to see, understand, and then act on that information faster than the enemy can react. While, the document does repeatedly caution that technology is not a panacea, the dramatic changes that it envisions for the Future Force place it clearly within the "technologist" camp.

A more detailed discussion of the specific force structure changes underway in the Army is found in the *Task Force Modularity Comprehensive Guide to Transformation*, Version 1.0 dated October 2004. This document outlines the specific composition of the major tactical formations that will compose the new Future Force. Two key

reconnaissance concepts are evident in the force structure designs proposed in this initial document. First, every echelon of command from theater to battalion requires its own organic reconnaissance capability. Second, reconnaissance is almost exclusively a passive activity. This function is performed by lightly armored ground scouts at the lower levels of command (battalion and brigade) and by predominately unmanned surveillance assets at the higher levels. While the Guide does recognize that there may be occasion where commanders must fight for information, this function is considered an unusual exception and is, therefore, assigned to the tank and infantry companies within the maneuver brigades (Task Force Modularity 2004, 7-45). In an interview with the document's primary author, Lieutenant Colonel (Retired) Mike Burke, in late 2004, I asked about the rationale behind the decision to remove the combat capability from traditional divisional and corps-level cavalry organizations. He believed that history has shown that as cavalry forces are augmented with combat capability, they become increasingly aggressive to the point that they are no longer a true reconnaissance organization but instead operate as an independent maneuver force. He cited the example of the heavy division cavalry squadron. With twenty-seven tanks, forty-one cavalry fighting vehicles, and sixteen light reconnaissance helicopters, this very robust organization is much better suited for decisive combat than for reconnaissance. He believed that by eliminating the tanks from the armed reconnaissance squadrons and from the battlefield surveillance brigades, these cavalry organizations would return to their traditional role of reconnaissance. Additionally, he also believed that the robust suite of UAVs in new units would enable the squadron to collect information passively without having to fight for it.

While the Task Force Modularity Guide repeatedly states that uncertainty at the tactical level will persist in war, the decision to eliminate any dedicated aggressive reconnaissance capability seems to support the theory that future commanders will not need to maintain a combat capability within their reconnaissance forces as a hedge against unexpected contact.

<center>The Traditionalists</center>

Many current and former cavalry officers have challenged this philosophical approach to reconnaissance expressed in recent publications by Task Force Modularity. One of these challenges came from Colonel (Retired) John D. Rosenberger, former commander of the 11th ACR at the National Training Center and author of the 1987 study mentioned earlier. In a June 2004 essay entitled, "Breaking the Saber: The Subtle Demise of Cavalry in the Future Force," Colonel Rosenberger raises two key objectives to the reconnaissance design of the Future Force.

First, he posits that the operational tempo of a maneuver force is tied directly to the tempo of reconnaissance that it is able to generate. To maintain a high tempo, commanders must, therefore, be able to rapidly gain and develop fresh information about the enemy. To hope that this critical information will be generated by a higher echelon employing unmanned surveillance platforms is overly optimistic and will likely lead to situation where commanders must halt their advance and await the correct intelligence or attack blindly (Rosenberger 2004, 8).

Second, Colonel Rosenberger believes that modern, intelligent, and adaptive enemies will seek to negate the US surveillance advantage by constructing a virtual or real "three-dimensional fortress" that effectively denies observation of their formation by

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surveillance alone. He cites the Serbian attempts to obscure NATO reconnaissance satellites and air platforms as examples of this trend (Rosenberger 2004, 5).

It should be noted that the 11th ACR has proven very successful in deceiving US surveillance platforms at the National Training Center. Colonel Rosenberger's experience commanding this unit has undoubtedly helped him to appreciate the vulnerability of both aerial and ground surveillance platforms. In this situation, the only way to penetrate this virtual fortress is to fight through it.

> It is impossible to do this without closing with the enemy, and engaging suspected enemy positions with direct-fire weapons in close combat to induce the enemy to return fire and disclose his actual location. In complex and urban terrain of various types, reconnaissance by fire is often the technique of choice as a means of developing the situation. (Rosenberger 2004, 5)

A second author who expresses clear reservation to the increased reliance on surveillance platforms is Colonel H. R. McMaster, currently the Regimental Commander of the Third Armored Cavalry Regiment. In a recent War College research paper entitled, "Crack in the Foundation: Defense Transformation and the Underlying Assumption of Dominant Knowledge in Future War," Colonel McMaster argues that "technological hubris" and a fundamental ignorance of enemy countermeasures has led to the erroneous conclusion that certainty in warfare is an obtainable goal (2003, 91). Like Colonel Rosenberger, Colonel McMaster also relies heavily on the experience of Operation Allied Force in Kosovo to demonstrate the limitations of surveillance operations against a determined and adaptive enemy.

<u>Summary</u>

Clausewitz argued that because human passions and the element of chance were so deeply entwined in the phenomenon of warfare, "real wars" would always look very

different from "war on paper." In other words, the real conditions of the battlefield will always be more complicated, confusing, and bloody than our theoretical examination would lead us to initially conclude. If Clausewitz is correct then we should expect to see a natural tension between the views of theorists who cite the capabilities of new emerging weapon systems and the views of veterans who cite the persistence of the hard human realities of combat. This historical review has shown that the tension predicted by Clausewitz correctly characterizes the debate over reconnaissance roles and capabilities over the last 70 years. Since World War II, theorists have argued that passive surveillance by lightly armed or unarmed platforms can collect critical information through stealth. They have defended their positions by citing the capabilities of new weapon systems and the results from peace-time training exercises and constructive simulations. The evidence collected from North Africa, Kuwait, and Iraq, however, paint a very different picture. After-action reviews from these conflicts consistently depict the situation as too fluid or too rapid to allow the proper employment of stealthy means of information collection. And so the debate continues today. Two major factions emerge today in the reconnaissance debate, organized roughly on these two Clausewitzian extremes. As the US Army undergoes one of the most profound reorganizations of its tactical units in recent history, the reconnaissance organizations that emerge will depend largely on the outcome of this debate.

Militaries often fall into the trap of designing organizations to fight the conditions of the last war rather than the next one. In doing so, large military forces are often the last to recognize significant changes in the nature of warfare that alter the paradigm upon which the previous conflict was based. This is the essential argument of the technologist

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school examined in this chapter. Theorists like Admiral Owens suggest that emerging information technologies have allowed the modern military to break from the lessons of the past and exploit opportunities that were incomprehensible only ten years ago. A thorough examination of this topic then requires a detailed look at how commanders employed reconnaissance on the contemporary battlefield where the full suite of modern technology was available. For this reason, the opening months of Operation Iraqi Freedom serve as an ideal historical laboratory in which to test a new reconnaissance hypothesis. The improvements in surveillance technology between Operation Desert Storm and Operation Iraqi Freedom have been substantial. Units deployed to Iraq with tools unimaginable to their predecessors of a decade ago. If the emerging surveillance technology will eventually allow us to break from the past as so many have argued, the first indications of this break should appear in the experience of tactical units in the opening months of Operation Iraqi Freedom.

<div align="center">Research Question</div>

This study directly examines the experience of tactical commanders in Operation Iraqi Freedom. The rapid, decisive, exploitation conducted by V Corps in Operation Iraqi Freedom is exactly the type of conflict that the heavy brigade combat teams of the Future Force are designed to fight. In the rapid advance from Kuwait to Baghdad, what did commanders at the battalion and brigade level need to know about the enemy to be effective, and how did they get that information?   If commanders found that surveillance platforms could answer their most pressing information requirements and allowed them to maneuver against the enemy without first making contact, then Army force design should reflect this fundamental change. If, on the other hand, the robust suite of

surveillance capabilities were not sufficient, then perhaps reconsideration of the proposed force design is appropriate. In the next two chapters, this paper will examine the firsthand experience of tactical units in Operation Iraqi Freedom to answer this primary research question--does effective reconnaissance require actual close combat with the enemy?

CHAPTER 3

RESEARCH METHODOLOGY

This chapter will explain and clarify the specific data sources and methods used in this study. Initially, this will include a discussion of the purpose of the Operation Iraqi Freedom Study Group (OIF-SG) and the methods originally employed to collect the data used in this study. Second is an explanation of the methods employed in this specific research effort to examine the large body of information available and answer the narrow research question posed in chapter 2.

<u>Subject</u>

The opening month of Operation Iraqi Freedom was the first sustained, high-intensity use of heavy Army forces since the 1991 Gulf War. In the weeks following the fall of Baghdad, Army Chief of Staff General Eric Shinseki commissioned a team of researchers headed by Brigadier General Mark O'Neill to conduct a thorough review of the US Army's performance in the opening phase of Operation Iraqi Freedom. The focus of this review was to immediately capture lessons learned from the fight that could quickly be disseminated out to the force. The Operation Iraqi Freedom Study Group composed of about ninety officers, soldiers, and civilians deployed to the Iraqi theater of operations and collected data on the operation from 7 May to 15 June 2003. During this period the OIF-SG collected over 119,000 documents ranging from unit after-action reports to operations orders. In addition, they conducted 2,214 interviews with participants in the operation. These participants ranged from private to lieutenant general and reflected every echelon of command from squad up to the Central Command staff.

Most of the interviews were taped conversations that were later transcribed into written form by personnel at the Center for Army Lessons Learned at Fort Leavenworth.

The focus of the interviews was twofold. First, the researchers sought to determine what happened during the operation before the passage of time made the reconstruction of events more difficult. Second, they tried to determine what immediate lessons the Army could learn and apply from the experience. For this reason, most of the interviews range from a simple recounting of events to a discussion of what worked and what did not work in the operation.

Because of the wide variety of personnel interviewed, the OIF-SG did not develop a standard list of questions for every interviewee. Instead, questions were tailored according to rank and battlefield functional area. For example, the maneuver team developed a list of almost 300 questions to select from while interviewing soldiers and leaders. The results of the interviews tend to reflect a more free flowing discussion of key points with the questions as a general guide rather than a rigorous question and answer process. The full archive of all the interviews conducted by the OIF-SG is available online on the Center for Arm Lessons Learned restricted archive or at the Combined Arms Research Library at Fort Leavenworth, Kansas.

It is important to note two critical limitations of this data set. Since this was an Army research effort, the extensive experience and lessons learned by the First Marine Expeditionary Force and the First United Kingdom Division during their attack are not reflected in the archive. Several commanders and leaders at the V Corps and theater level commented on connectivity challenges with these units but the specific, firsthand accounts of their actions and lessons learned are not included in this research. A second

limitation involves operational security. Approximately 10 percent of the interviews are still classified as secret. Although very few of the classified interviews pertained to the primary research question, these were omitted to allow for wide distribution of the research results.

<div align="center">Data to Be Used</div>

Because of the limited scope of the research question posed in the previous chapter, only a minority of the interviews have relevance to this project. The research question centers on the reconnaissance system at the tactical level. The three major components of that system are those who consume intelligence information, those who produce or analyze that information, and those who collect it on the battlefield. Using this approach, interviews were categorized and prioritized for review into three major groups. The first group included the interviews of ground tactical commanders from battalion through Corps level. These were the intelligence consumers. The second group consisted of intelligence personnel from battalion intelligence officers (S2s) all the way up to the CFLCC (Combined Forces Land Component Command) intelligence officer (C2). They constituted the intelligence producers. The third and final group was the collectors. This included ground scouts moving by foot, wheel, or track, the operators of aerial reconnaissance platforms, the soldiers in the Military Intelligence battalion, and Special Operations forces that collected human intelligence. A close look at all three groups gave a clear picture of how well the entire reconnaissance system functioned during the fight.

<div align="center">Procedures and Sampling</div>

The first category, unit ground tactical commanders, was the most important and was the focal point of the research. As defined in chapter one, the purpose of a

reconnaissance operation is to provide the commander with information that he needs to visualize and understand the battlefield. Since the objective is to provide a picture for the commander, the standard by which to measure the effectiveness of a reconnaissance operation is also in the mind of a commander. If a particular reconnaissance asset is providing mountains of data but not helping the commander to visualize the battlefield, it is failing in its mission. Because of this unique purpose of the reconnaissance system, the impressions of unit commanders and those immediately surrounding them should be of paramount importance.

A total of twenty-three battalion commanders, eight brigade commanders, and three division commanders all contributed interviews to the archives. In thirty-three additional cases, senior members of their staffs from battalion executive officers to chiefs of staff also provided great insight into the commander's situation. Both the CFLCC Commander Lieutenant General McKiernan, and the V Corps Commander Lieutenant General Wallace as well as most of their primary staffs also conducted interviews. Additionally, a representative sample of interviews from tactical leaders at the squad, platoon, and company levels were examined to better understand the information needs of consumers at the lowest tactical level.

Intelligence personnel made up the second category of interviews. The subjects were distributed from theater to platoon level with twenty-three interviews from CFLCC, six at V Corps, seven at division level, thirteen at brigade, and thirteen at battalion level.

The third category was the collectors. Interviews in this category included thirty soldiers assigned to lightly armored scout units, seventeen soldiers assigned to heavily

armored scout units such as 3-7 Cavalry and twenty-three soldiers assigned to military

intelligence battalions or brigades.

In summary, this research examined 311 total interviews out of the total data set

of 2,214 originally compiled by the OIF-SG.

<div align="center">Questions Posed</div>

As stated earlier, the purpose of this research was to determine if close combat

was essential to effective reconnaissance in Operation Iraqi Freedom. Since these

interviews come from a pre-existing data set, statistically quantifiable answers to specific

questions were not readily attainable. Instead, the research examined each of the three

categories of interviews from a qualitative standpoint in an attempt to identify emergent

themes from the data. Questions were developed for each of the three sets of interviews

that focused on the central research question. Intelligence consumers, producers, and

collectors all have differing roles within the overall reconnaissance system so different

questions were developed for each data set.

For the consumers, the primary focus of the research was to understand what they

needed to know in order to maneuver their force. The unit commanders also played a

central role in the weighing of risk and benefit in any reconnaissance operation. For this

reason, their choice of reconnaissance method indicated both the type of information they

needed and the risk they were willing to accept in gathering this information. The

following questions were, therefore, posed to the first group, the intelligence consumers:

1. What information did commanders need to know about the enemy?

2. What methods did they use to find that information?

3. What factors influenced their decisions to employ different methods of reconnaissance?

The intelligence producers were tasked with the mission of converting raw intelligence data into a coherent picture of the enemy. In short, it was their mission to understand the enemy and translate that understanding to the commander that they supported. In this role, they sifted through mountains of data flowing from both their higher and lower headquarters to find key pieces of information that contributed to the overall understanding of the enemy. The type of information that they received and their assessment of the value of that information offer critical insight into the research question. With this in mind, the questions for the second group, intelligence personnel, were:

1. What information were intelligence staffs able to get from surveillance assets at their higher headquarters?

2. Could intelligence staffs accurately template the enemy and predict his actions based on the intelligence they had at their disposal?

The third and final group, the intelligence collectors were faced with the practical realities of taking intelligence requirements and turning them into unit orders, whether that meant sending a scout forward to reconnoiter a key bridge or flying a UAV over an enemy town to understand what was taking place beneath. They encountered firsthand the technical and human limitations of each type of reconnaissance and had to make difficult decisions about how to execute their reconnaissance mission. Understanding their practical limitations is crucial to the research question. The questions posed for the third group were:

1. Were they able to answer the priority information requirements (PIR) that were being asked of them? If not, what resources did they lack?

2. Could the ground scouts provide actionable intelligence to their commanders without having to risk contact with the enemy?

These three sets of questions posed at each of the three major group of subjects within the reconnaissance system allowed for a comprehensive examination of the research question from a broad variety of perspectives.

Analysis

After reviewing the selected sample of interviews according to the questions posed above, results were categorized according to emergent themes that impact on the primary research question. Seven major themes appeared consistently across the data sample and those themes are discussed in the beginning of the next chapter.

The results of this research were combined with known results from previous studies such as the Goldsmith studies and the "Tait Report" of Operation Desert Storm in an attempt to explain the role of close combat in reconnaissance operations in a holistic way. Specifically, based on the results research and known previous experience, what factors influence the effectiveness of passive and aggressive methods of reconnaissance? This analysis is expanded into a general model in chapter 4 that attempts to explain the dramatically different conclusions arrived at by peace-time analysis like the Goldsmith studies versus the experience of real combat. Finally, specific recommendations consistent with the contemporary and historical analysis were examined as well as proposed areas for future research.

CHAPTER 4

ANALYSIS

Research Results

This research seeks to determine if reconnaissance operations in Operation Iraqi

Freedom required engaging the enemy in close combat in order to be effective.

Qualitative examination of the interviews from the Operation Iraqi Freedom Study Group

yielded seven consistent themes that impact on this primary research question. Those

seven themes are summarized below:

1. Tempo drives reconnaissance

2. The movement to contact is the most common form of the offense

3. Adaptive enemies often do not fit doctrinal templates

4. Commanders required human intelligence more than imagery

5. Most useful intelligence is bottom up

6. Lightly armored scouts cannot support high tempo operations

7. Divisional heavy cavalry squadrons tend to fight as independent maneuver
    units

Theme 1: Tempo Drives Reconnaissance

The most significant theme that emerges from virtually every interview in all

three groups dealt with the issue of tempo. The strategic situation demanded a rapid

advance to Baghdad followed by a quick strike against the city and the regime. This was

necessary to protect critical natural resources, preempt and use of chemical or nuclear

weapons, and keep the enemy off balance by advancing faster than he could react.

Recognizing this reality, operational planners at CFLCC planned the deepest, most rapid

advance of a mechanized force in modern history. The focus of V Corps from the start of

the campaign was to deliver the Third Infantry Division as rapidly as possible to the

Karbala Gap where they would destroy the Medina Division and begin the encirclement

of Baghdad. This focus generated an insatiable demand for tempo that far exceeded

anything that the Army had for trained in simulations or at the National Training Center.

The tempo stressed virtually every battlefield operating system to the breaking point.

Since the tempo was built into the plan and driven by operational and strategic

requirements, commanders at the tactical level were unable to slow it down. The CFLCC

set the "cruise control" and everyone in the formation was obligated to keep up. The

concept of "see first, understand first, act first, and finish decisively" often quoted in

Army transformation documents implies that a tactical commander has the flexibility to

modulate his unit's tempo and maneuver his formation after he has a good understanding

of the enemy. In fact, the exact opposite occurred. The operational tempo forced

commanders to act immediately with little to no information and adjust the plan as the

situation developed.

Theme 2: The Movement to Contact Is the Most Common Type of Offense

The rapid tempo led Lieutenant General William Wallace commander V Corps, to

conclude that his entire formation from platoon to corps was in a movement to contact

from the time they crossed the berm in Kuwait until the fall of Baghdad. This comment is

echoed in interviews of three brigade commanders and Brigadier General Freakley,

Assistant Division Commander of the 101st Division. Units rarely had any real sense of

what enemy formations were immediately in front of them because they were simply

unable to template the enemy at the level of detailed required to plan a deliberate or even

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a hasty attack. In these cases where uncertainty abounds, Army doctrine stresses that the unit should conduct a detailed reconnaissance of the enemy on the objective and plan a deliberate operation to defeat that enemy. This is exactly what units are trained to do in brigade level attacks at the National Training Center. Unfortunately, for the reasons mentioned above, no brigade commander could afford to slow down long enough to carry out this type of reconnaissance.

Theme 3: Adaptive Enemies Often Do Not Fit Doctrinal Templates

Colonel Perkins, commander of Second BCT, Third Infantry Division, called it "iconology." Brigadier General Freakley from the 101st mentioned the same idea more pejoratively calling it "blobology." They were both referring to the tendency of intelligence officers to draw a red icon on a map and assume that they had effectively templated the enemy.

In the context of US tactical doctrine, a red icon implies that at the designated location, one can find a cohesive, uniquely equipped enemy formation of a particular size and composition that is executing a specific tactical task. If a brigade S2 at the National Training Center marked a red icon for an enemy tank company on a piece of key terrain, a reasonably proficient officer could assume that he would find ten or so enemy tanks with crews all located at that particular piece of terrain established in some type of cohesive defense. In fact, one could infer a great deal about the capability and the intention of that unit under the red icon simply by understanding his equipment, doctrine, and the icon's context within the larger enemy picture. Operation Iraqi Freedom revealed that this rather simplistic view of the enemy, reinforced through years of training against

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symmetrical adversaries like the Combat Training Center Opposing Forces is fraught with fallacy.

In Operation Iraqi Freedom, S2s quickly discovered that the size and the quality of equipment of a particular enemy unit told them very little about the severity of resistance they might encounter. Time and again, large conventional formations would crumble in the face of American assault while small bands of Iraqi irregular offered intensely fierce resistance. In this context, an icon was essentially meaningless because it told a commander very little about what type of enemy contact he could expect or what the enemy's intention was. Despite the considerable effort and resources devoted to reconnaissance, the enemy simply would not fit any easy template. Lieutenant Colonel Lee, G2 for Fourth Infantry Division, summed up the frustration of many in the intelligence community when he declared in his interview that "there are no red icons!"

Since the size and composition of the enemy said little about his capability or his intent, commanders found that this type of detailed information that often flowed down from satellite imagery, UAV surveillance, or passive reconnaissance efforts was essentially meaningless. To understand the enemy's intent, they needed human intelligence (HUMINT).

Theme 4: Commanders Require Human Intelligence More Than Imagery

Many key leaders commented on the importance of human intelligence. The special operations forces teams that worked in support of both Third Infantry Division and 101st Air Assault were absolutely vital in this capacity. Often the most useful information came from captured Iraqi prisoners or from Iraqi citizens. Colonel Grimsley, commander of First BCT, Third Infantry Division commented that he finally understood

what the enemy was doing in the town of An Najaf when Iraqi citizens drove out to one of his tank battalions and told the soldiers what was taking place. According to the locals, the Special Republican Guard and the Fedyeen Sadaam were conscripting locals and compelling them to attack the Americans. All the UAV or satellite imagery in the world would not have revealed this critical detail about the enemy strategy.

Theme 5: Most Useful Intelligence Is Bottom Up

Because of the "iconology" fallacy and the consistent failure of surveillance assets to predict enemy action, many interviewees, to include many of the battalion commanders interviewed believed that the vast majority of useful intelligence came from within their own formation. Colonel Perkins commented that, "the majority of intel that the brigade actioned off of came from tactical units." Lieutenant Colonel Ferrell, commander of the division cavalry squadron for the Third Infantry Division, commented that higher-level G2s provided very little intelligence to the squadron. The vast majority of intelligence he used was generated by his own formation. This sentiment is echoed over and over again by other battalion commanders.

Major General Marks, C2 for CFLCC observed what he called a "break in the system" somewhere between the battalion and division level. Information moved relatively easily between CFLCC, V Corps, and the divisions because of the large bandwidth capabilities of these headquarters. However, at the brigade and battalion level this information "bottle-necked" down to only what could be transmitted over a voice radio net. Major General Marks summed up this sentiment with the comment, "At the battalion level, it is a bump in the night."

The largest conventional tank battle of the war occurred on the morning of 3 April 2003 when elements of three Iraqi brigades consisting of no less than 100 armored vehicles and up to 10,000 soldiers converged on 3-69 Armor as they guarded a critical bridge crossing the Euphrates River at Objective Peach. This type of large conventional force is the ideal formation that the extensive surveillance network operating in Iraq should have been able to detect. Lieutenant Colonel Marcone commander of 3-69 Armor, claims that, "the Iraqi Republican Guard did nothing special to conceal their intentions or their movements. They attacked en masse using tactics that are more recognizable with the Soviet army of World War II" (Talbot 2004, 44). Despite the large conventional force moving against him, Lieutenant Colonel Marcone reported that, "we got nothing until they slammed into us." In fact, the battalion did not receive a single piece of intelligence from their higher headquarters to indicate that such a large attack was imminent. The commander had terrible situational awareness that night in spite of the large array of airborne reconnaissance platforms that were supposedly watching his front. With almost no early warning, 3-69 Armor was able to successfully fight off the attack due to the unit's quality training, superior armor protection and the disjointed nature of the Iraqi attack.

While bandwidth limitations certainly plagued the process of intelligence dissemination, the problem was deeper than a simple limitation of technology. Battalion commanders complained that the information from higher headquarters was the wrong kind of data because it too often of the "iconology" variety rather than the down to earth human information that the Special Operations forces or their own scouts and combat

units could generate. Human information told them the enemy's intent in ways that satellite imagery never could.

Theme 6: Lightly Armored Scouts Cannot Support High Tempo Operations

The three brigade combat teams of the Third Infantry Division were each equipped with brigade reconnaissance troops consisting of ten HMMWV mounted scouts equipped with the long-range advanced scout surveillance system (LRASS) and a combination of Mark-19 grenade launchers and .50-caliber machine guns. Operation Iraqi Freedom was the first test of the new brigade reconnaissance assets in combat since their creation following the 1996 Goldsmith reconnaissance study. Likewise, each battalion task force included a similarly equipped scout platoon of six HMMWVs.

Perhaps the greatest success of this new design was the LRASS optical system. Numerous interviews spoke of the incredible capability of the new sight to acquire and classify enemy targets at extreme distances. The greatest praise came from Colonel Allyn, commander of Third BCT, Third Infantry Division, who related an incident near Karbala where his brigade reconnaissance troop was able to acquire precise ten-digit grids of enemy vehicles and dismounts with their LRASS at a range of 3,600 meters and then pass that information directly to his artillery battalion for a first round hit.

Despite the successes of the LRASS optical system, the vulnerability of the lightly armored scouts proved to be a significant limitation. Shortly after crossing into Iraq, most of the brigade reconnaissance troops transitioned from their traditional role of forward reconnaissance to conducting route security or convoy escort for the unit trains. The same thing happened with the task force scout platoons. In a few cases, units attempted to equip their scouts with M113s from their maintenance sections in order to

afford them some measure of survivability. In the majority of cases, commanders simply stopped using their reconnaissance troops for reconnaissance.

Lieutenant Colonel Sanderson, commander of 2-69 Armor, commented that he could not employ his HMMWV scouts because he saw that they were incapable of screening in front of a moving force. Lieutenant Colonel Rutter, commander of 2-7 Infantry, chose to keep his scouts less than two to three kilometers from his lead forces to provide them some degree of protection. Lieutenant Colonel Twitty, commander of 3-15 Infantry, used his scout platoon as convoy escort and employed M2 infantry fighting vehicles from his line companies to conduct reconnaissance for the battalion. Colonel Perkins pulled his brigade reconnaissance troop from the reconnaissance mission when the rocket-propelled grenade (RPG) threat became too intense.

The only unit in Third Infantry Division that had scouts operating in armored vehicles was the division cavalry squadron, 3-7 Cavalry. However, during a tough fight against incessant RPG attacks, Lieutenant Colonel Ferrell found the situation too dangerous to attack even with the medium armor on his M3 cavalry fighting vehicles. He had no information about what was around the next corner or over the next hill but he had to continue the advance. To solve this dilemma, he made the dramatic decision to place his tanks forward of the M3s and then told his scouts to ride on the tanks in the place of the tank loaders.

Light scout units were created in the 1990s based largely on the NTC experience and the findings of the 1987 and 1996 Goldsmith studies. Because the tempo and the terrain of the NTC affords commanders the opportunity to employ stealth effectively to infiltrate through enemy security areas, passive reconnaissance by lightly armored

vehicles has proven successful in this environment. Unfortunately, the long time periods that are so essential to effective infiltration were not available in Operation Iraqi Freedom and the light scout became incapable of operating beyond immediate supporting distance of heavy forces. Because of the superb range and effectiveness of the LRASS optics, some scout units were able to compensate for this limitation by seeing further. In restrictive terrain, the extended range of the LRASS was less useful and the need to stay close to the line companies became more acute. As a result, light scouts were rarely effective in restrictive terrain.

When scout platoons were employed in traditional reconnaissance roles, they very frequently made direct fire contact with the enemy and had to call upon heavy forces to help them. For example, the scout platoon for 3-69 Armor was conducting a route reconnaissance in the vicinity of Objective Peach on 3 April when it was ambushed by unconventional forces equipped with submachine guns and RPGs. The platoon would likely have been overrun if a section of tanks and Bradleys from 3-7 Cavalry that was also in the area had not come to their rescue.

Captain Woodward, commander of the brigade reconnaissance troop for Second BCT, Third Infantry Division observed that every time his unit conducted a screen, they had to be supported with firepower from more survivable platforms. This along with many similar anecdotes reinforced the idea that light scouts needed to operate within the protective supporting range of heavy armor forces.

This situation is reminiscent of the mechanized cavalry squadrons that emerged in the 1930s equipped with armored cars and jeeps. The experience of North Africa proved

that effective reconnaissance almost always involved fighting and that light scouts had to have some degree of survivability or the support of heavy forces to remain effective.

Theme 7: Divisional Cavalry Squadrons Tend to Fight as Independent Maneuver Units

The 3-7 Cavalry was the only heavy cavalry formation employed in the opening month of Operation Iraqi Freedom. It led the Third Infantry Division for much of the movement up to the Karbala Gap and participated in some of the most intense fights of the campaign. Most of the missions executed by 3-7 Cavalry were oriented on protecting the Third Infantry Division main body or conducting economy of force. Lieutenant Colonel Ferrell, commander of 3-7 Cavalry, commented that the majority of missions he received had the unit screening or guarding on behalf of the Division. Because of the large size and enormous capability of the squadron it did frequently perform more as an independent maneuver battalion rather than a reconnaissance force. This was mostly by design. In fact, on one occasion, Lieutenant Colonel Ferrell took pride in the fact that although his unit was initially tasked just to observe the Hammurabi Division at An Najaf, he saw an opportunity and attacked it. The observation that divisional cavalry squadrons had grown so large that they frequently fulfilled the role of a separate maneuver formation rather than a reconnaissance force was largely supported by the record in Operation Iraqi Freedom.

<center>Building a Reconnaissance Model</center>

The data from this research are consistent and conclusive enough to support several broad conclusions about the nature of reconnaissance operations on the modern battlefield:

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1. The operational tempo of the battlefield is the primary determining variable on a commander's decision to employ passive reconnaissance or to fight for information. In Operation Iraqi Freedom, like Operation Desert Storm before it, the tempo was sufficiently fast to preclude the effective use of passive reconnaissance in the majority of cases. The high tempo forced lightly armored scouts to move very rapidly in order to stay ahead of the main body. The required speed dramatically reduced the ability to employ stealthy infiltration techniques while scouting.

2. Without the benefit of stealth, lightly armored scout teams were at great risk. For this reason, commanders were unlikely to employ lightly armored scouts if they believed that they will be operating within the maximum effective range of enemy direct fire assets. Commanders chose not to use their scouts rather than run the risk of losing them on a real battlefield.

3. Because peacetime training exercises typically operate at much lower tempo and casualties are much more acceptable, stealthy reconnaissance is both feasible and effective. For this reason, Army studies that base their conclusions on the results of training exercises will invariably argue that lightly armored scouts are a practical and essential method of reconnaissance.

4. Intelligent and adaptive enemies will not allow themselves to become victims of American precision weaponry. For every advance made in precision strike capability, the enemy will find new ways to blend into the surrounding environment to avoid detection. As this process makes it more difficult to discern the enemy from its environment, the idea of conducting reconnaissance through passive surveillance becomes more difficult as well.

These emergent themes and conclusions suggest a general theoretical framework for better understanding the effectiveness of different types of reconnaissance on the battlefield. The research indicates that the choice of which reconnaissance method is most effective depends primarily on two major variables--operational tempo and battlefield density.

<div align="center">Operational Tempo</div>

Field Manual 3-0, *Operations,* defines tempo as "the rate of military action." A more specific definition of this might be "the rate at which a commander must solve tactical problems." The solving of each separate and distinct tactical problem requires the commander to gather information about the enemy, the terrain, and his own force. Under ideal circumstances, the commander would then need to mount a new reconnaissance effort for each successive tactical problem. It follows then, that the commander's appetite for reconnaissance information is directly proportional to the tempo of operations. Not only is the volume of required information increased by a rising tempo but the rate at which reconnaissance assets must acquire, assess, and transmit that information to the main body increases as well. For these reasons, the operational tempo is an enormously important variable in determining the most effective method and means for conducting reconnaissance.

The more restricted definition offered above allows for an easy comparison of the tempo of operations in various conflicts--real, simulated, or constructive. For example, during the typical "high-intensity" rotation at the NTC, battalion and brigade commanders are required to solve a new tactical problem approximately every forty-eight hours. During the offensive maneuver portion of Operation Iraqi Freedom, commanders

found themselves dealing with new and complex tactical problems on the order of every eight to twelve hours. This is a four-to-six fold increase in tempo over anything encountered in even the most elaborate training facilities.

In the training environment, a battalion or brigade scout may take three-to-five hours of darkness to infiltrate forward of the brigade and establish position over-watching some critical point on the battlefield. If this time is reduced by a factor of six, the scout now would have to complete his infiltration in less than thirty minutes. The Goldsmith study in 1996 demonstrated that when light scouts at the NTC tried to infiltrate too quickly, they were almost always destroyed. Clearly, under these circumstances trying to advance by stealth substantially increases the risk.

As figure 1 graphically demonstrates, if the risk of compromise increases with increasing tempo, the commander will eventually arrive at a dilemma. He must choose one of three options: (1) reduce his tempo of operations, (2) raise his acceptable level of risk and accept higher casualties among his light reconnaissance assets, or (3) find another way to conduct reconnaissance.
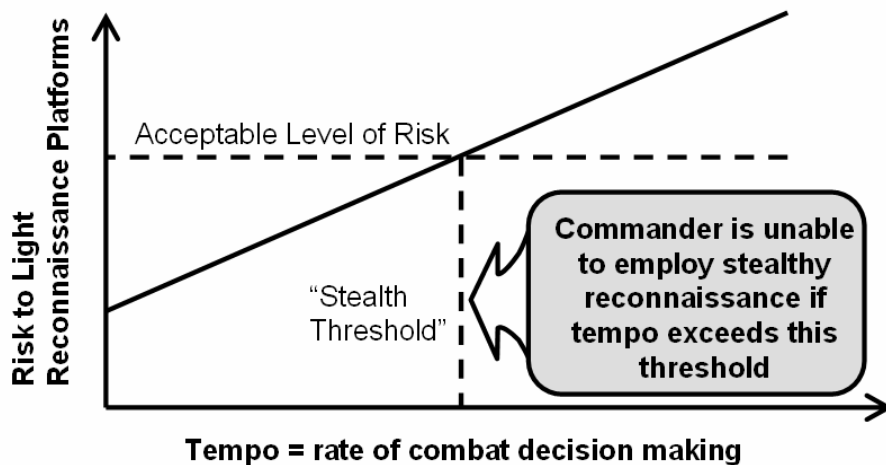
The figure shows a graph with "Risk to Light Reconnaissance Platforms" on the vertical axis and "Tempo = rate of combat decision making" on the horizontal axis. A horizontal dashed line labeled "Acceptable Level of Risk" crosses a rising diagonal line. A vertical dashed line labeled "Stealth Threshold" marks the intersection. A callout box reads: "Commander is unable to employ stealthy reconnaissance if tempo exceeds this threshold"

Figure 1.   The Relationship between Tempo and Risk to Light Reconnaissance

The first option is not feasible. Despite the Army adage to "see first" and then "act decisively," tactical commanders are bound by strategic and operational imperatives and rarely have the flexibility to reduce their tempo on their own accord. The second option, to raise the risk level, was the approach tried in Operation Torch in North Africa when light reconnaissance units suffered enormous casualties at the hands of dug-in German panzers. Since Operation Desert Storm, most American commanders have chosen the third option. Faced with an unacceptably high risk level, commanders have elected to not use their scouts rather than risk losing them. The result is that our tactical maneuver formations now have a "stealth threshold," a speed limit beyond which their light reconnaissance cannot operate. If the tempo of operations exceeds this threshold then the deliberate attack so common in training exercises becomes impossible and units are forced to conduct a continuous movement to contact leading with their most survivable combat systems.

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Some will argue that emerging UAV and satellite technology will change this paradigm because an aerial surveillance platform does not suffer under the same "speed limit" as a ground reconnaissance vehicle. The experience in Operation Iraqi Freedom has demonstrated, however, that operational tempo is only half of the problem.

Battlefield Density

The second factor that appears to play a major role in the effectiveness of reconnaissance operations can best be described as "battlefield density." Put succinctly, battlefield density is a measure of the amount of energy that a reconnaissance force must apply to distinguish a threat from its surrounding environment. This variable is really the combined effect of two battlefield conditions, one based on the terrain and the other on the enemy.

The classification of terrain as "dense" or "complex" is a familiar idea that enjoys common usage in military doctrine and contemporary writing. We recognize cities or jungles as "dense" terrain and the plains of Europe or deserts on the Middle East as "open." This is really just a measure of the average range of visibility at any particular point on the ground. In very dense terrain such as a city or a jungle where visibility can be less than 100 meters, a reconnaissance asset must expend inordinate resources to identify the threat. Conversely, in the open deserts of Southern Iraq or California where inter-visibility often exceeds twenty kilometers identification ranges are often limited only by the technical capabilities of the reconnaissance platform.

Terrain, however, is only a part of the overall density equation. The composition and capability of the enemy force also plays a significant role in this calculation. In situations where the enemy force is equipped in standard military vehicles, wears

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distinctive uniforms, and operates according to a coherent doctrine, less energy is

required to determine his location and disposition than a situation where the enemy wears

civilian clothes, fights from commercial vehicles and operates in decentralized roving

bands.

These two factors, the density of the terrain and the distinctness of the enemy

force, combine on every battlefield to affect the nature and conduct of military

operations. Known collectively in this model as "battlefield density," they have enormous

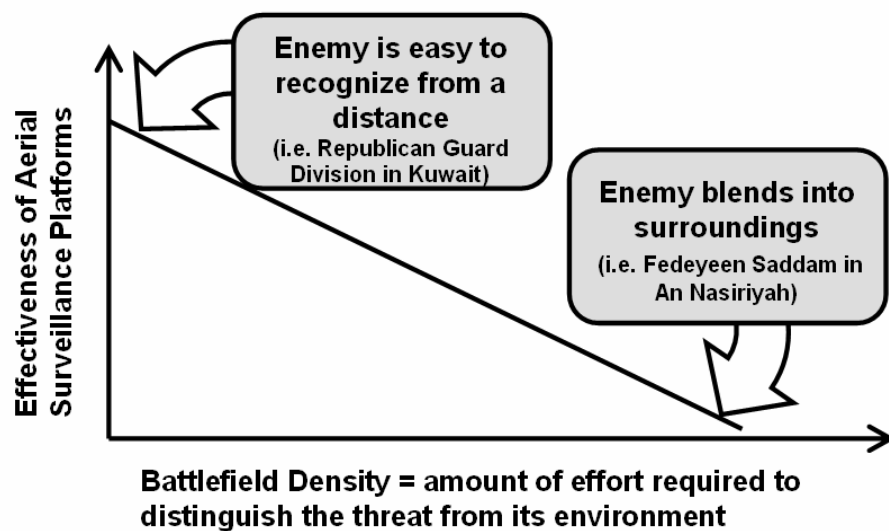influence on the effectiveness of reconnaissance operations.

Figure 2.   The Relationship between Battlefield Density and the Effectiveness of Aerial
Surveillance Platforms

A Reconnaissance Model

An adequate reconnaissance model should combine the critical variables of tempo and density. Placing both variables on the same chart allows for a comprehensive description of the reconnaissance problem. In situations where the operational tempo is low, stealthy ground reconnaissance can prove very effective, even when the enemy is difficult to find. Given a week to prepare, a good dismounted scout team could establish a good template of enemy positions in a place like Fallujah. Likewise, in situations where the operational tempo is high but the density is low, aerial surveillance is very effective. For example, a UAV would be a great asset to an armor formation advancing rapidly across open desert in search of an enemy tank division. The problem arises when both variables, density and tempo, reach the high end of the spectrum. In that case, the tempo prevents the usage of light reconnaissance and density precludes effective usage of aerial surveillance. Unfortunately, this has been the prevailing condition of the last two major military conflicts.
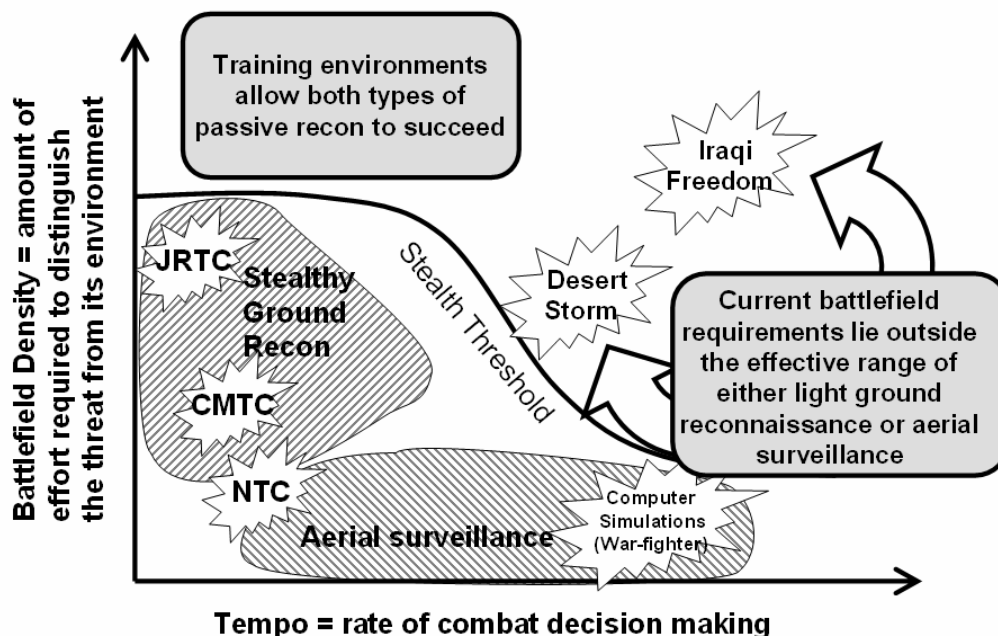
Figure 3.   The Combined Effects of Operational Tempo and Battlefield Density on Reconnaissance Operations.

As precision-guided munitions force more of our enemies to seek a virtual sanctuary from our observation we can expect battlefield density to continue to increase. As our ability to rapidly sustain maneuver formations over long distances increases, we should also expect a demand for ever greater tempo. This is the environment in which we have fought and will continue to fight wars of the future. Unfortunately, the live and constructive training environments in which we train and test our forces are very different. This explains the radical difference between the recommendations of a study based on training results like the Goldsmith studies and one based on combat reports like the "Tait Report".

Reconnaissance Experience at the Combat Training Center

The operational environment of the combat training centers falls at the very low end of the tempo spectrum. Tactical commanders at the NTC generally have forty-eight hours to reconstitute their force, conduct abbreviated planning, develop information through reconnaissance, and execute their tactical plan. Because of the extended time for planning and reconnaissance, scouts are able to conduct deliberate infiltration operations utilizing stealth and moving at rates often less than five kilometers per hour.

Additionally, the battlefield density at the NTC is comparatively low. Inter-visibility ranges typically exceed ten kilometers and the terrain is devoid of vegetation or man-made objects that would otherwise clutter the battlefield. The enemy also fights as a typical nation-state modern military with distinct uniforms, vehicles, and a coherent doctrine that make it readily distinguishable from a distance.

In our model the environment of the National Training Center lies at the very low end of both the density and tempo spectrums. The Joint Readiness Training Center (JRTC) at Fort Polk and Combined Maneuver Training Center (CMTC) at Hohenfels, Germany are only slightly different from the NTC environment but not substantially enough to affect the type of reconnaissance that is most effective.

Computer Simulations

Most force developers recognize the limitations of the NTC and agree that developing a force based exclusively on experience from the combat training centers is fraught with danger. As a result, much of the data to support new concepts of reconnaissance is derived from a combination of training center trends and the results of computer simulations. The ten different Army battle labs scattered throughout the force

routinely conduct these types of simulation exercises to test new war-fighting concepts. The advantage of a computer simulation is that it allows testing of concepts at the sustained, high-tempo rate that would be difficult to simulate in a real environment. Often these experiments, like Millennium Challenge in 2002 found great value in the power of aerial surveillance platforms like the UAV. Because they operate above the battlefield, a UAV can continue to stay ahead of a fast moving armor formation where a ground scout would be quickly bypassed.

The fallacy in many of these computer simulations goes back to the concept that Colonel Perkins referred to as iconology--the assumption that the threat is a cohesive collection of weapon systems employed in a doctrinal manner. In the world of iconology, gaining visual observation with the enemy tells the observer a great deal about its capability and his intent. UAVs and other aerial surveillance platforms excel in this world. In my own personal experience as a battle captain during a Warfighter exercise with the Second Infantry Division, I discovered that flying a scout helicopter over a large swath of terrain yielded an immense amount of data about the enemy in that terrain, because the aerial scout could "see" all the icons even though my personal knowledge of the terrain suggested that this area was all but impenetrable to aerial surveillance. Because of the way that computer simulations are built, the enemy is relatively easy to detect once an observer establishes a direct line of sight. Battlefield density in the virtual world of the computer simulation is, therefore, relatively low. This explains why many advocates of modern surveillance technologies are so optimistic about their capabilities. Computer models have taught that as long as a UAV or a satellite is looking at the terrain, the enemy icons will be visible and the enemy intent will be clearly understood. The

theory that commanders will one day be able to "develop the situation out of contact" (Riggs 2002) is founded on these simulations.

Operation Desert Storm

Lieutenant General Yeosock commander of Third Army in Operation Desert Storm, noted that the reconnaissance line advanced about five kilometers an hour in the march across Kuwait (Swain 1993). While this may seem slow, it added up to a daily advance of almost one hundred kilometers a day, far exceeding any previous operation in history. For this reason, most units found it difficult to continue to infiltrate their scouts forward of the advancing armor formations. This was particularly true in areas where the density of the terrain prevented the scouts from easily locating the enemy at the extreme range of their optical systems. Based on the findings of the "Tait Report", it appears that reconnaissance forces in Desert Storm operated right along the edge of a "stealth threshold" where passive reconnaissance forces could only effectively operate in areas where the enemy was reasonably easy to distinguish from its environment. If those conditions did not exist, commanders pulled their scouts and fought for intelligence using their heavy maneuver forces.

Operation Iraqi Freedom

Both Major General Petreus and Colonel Perkins commented that the rate of advance in Iraq in 2003 ranged from twenty-five to thirty kilometers per hour. This was a five fold increase over Operation Desert Storm and reflected the significantly higher tempo of the operation. Additionally, the battlefield density throughout Operation Iraqi Freedom was dramatically different. In Kuwait in 1991, US forces encountered uniquely equipped, conventional forces of the Iraqi Army in the generally open terrain of southern

Iraq. In these conditions, it was relatively easy to distinguish a threat from its environment. In Operation Iraq Freedom, most of these conventional forces crumbled quickly and a new unconventional threat emerged. Enemy combatants dressed in civilian clothes and abandoned their military vehicles for "technicals," civilian trucks and cars armed with explosives or heavy weapons. Because these technicals were virtually indistinguishable from the civilian population, they were almost impossible to detect through observation alone. In Operation Desert Storm, many engagements between Iraqi and American forces took place at ranges beyond two kilometers. In Operation Iraqi Freedom, technical vehicles frequently approached within one hundred meters of American forces before it became apparent that they posed a threat. Battlefield density in this operation increased exponentially.

The increase in tempo coupled with the higher battlefield density pushed most fights in Operation Iraqi Freedom far beyond the "stealth threshold" established in figure 3. Passive reconnaissance was practically useless for two reasons. The tempo was too high to allow for effective infiltration forward of the main body, and the threat force could not be detected by visual observation alone.

CHAPTER 5

CONCLUSIONS

The themes that emerged in this research lead to several conclusions about the current direction of Army doctrine and force development. Most importantly, the research conclusively establishes that effective reconnaissance very often requires engaging an enemy in close combat. This is particularly true in rapid, offensive operations against an adaptive and elusive opponent. This is consistent with similar lessons learned at great cost during World War II, the Korean War, and Operation Desert Storm. Furthermore, the interviews examined clearly reveal that modern surveillance technology, which was present in great abundance during Operation Iraqi Freedom, has not fundamentally altered this condition. For the Army to benefit from the lessons learned in this conflict, it must re-examine its basic assumptions about the power of surveillance technology and information dominance. Specific doctrinal and organizational changes that should result from this re-examination are outlined below.

Act Now, See, Understand, Adjust, and Finish Decisively

The "quality of firsts" is a flawed and misleading concept. American military might is based largely on our ability to maintain an operational tempo that vastly exceeds our adversary. Operational commanders will not forfeit this enormous advantage in order to allow tactical units to fully develop the enemy situation. On the contrary, they will insist that tactical commanders attack as rapidly as their logistics will allow. The call to see first, understand first, act first, finish decisively implies that a tactical commander has the luxury of seeing and understanding before acting. Operation Iraqi Freedom has demonstrated that this not correct. Tactical commanders must be prepared to "act now,

see, understand, adjust, and finish decisively." This new mindset requires a fundamental

readjustment of the way we fight. Imagine for example, Major General Blount's dilemma

on 31 March 2003 as his division poised on the outskirts of Baghdad, and he

contemplated the first major offensive into this heavily defended urban terrain. The

extensive aerial reconnaissance of the city indicated an elaborate defense but offered little

useful information upon which he could base a deliberate attack. If this had been a

tactical scenario at the National Training Center or a simulation-based Warfighter

Exercise, the observer-controllers would have strongly advised him to take the time

necessary to carefully infiltrate reconnaissance assets into the city and fully develop the

situation. Unfortunately, this tactically sound advice was operationally unfeasible. Major

General Blount saw that the Saddam regime was off-balance and an immediate blow had

the potential to quickly end the war. He had to maintain the tempo to exploit this

opportunity. In this context, there was simply no time to see before acting. After

recounting the dilemma, the book *On Point* explains the commanding general's decision.

> Uncertainty abounded as to what available information and events said about the
> Iraq defenses in and around Baghdad. Yet instead of slowing his division's tempo
> to better assess and understand the enemy situation, Major General Blount pushed
> forward relentlessly. As the division advanced through the Karbala Gap to
> Objectives SAINTS and LIONS, he accelerated the attack in order to exploit
> success. (Fontenot, Degen, and Tohn 2004, 283)

Certainly, if either Major General Blount or his brigade commanders had taken

counsel of the Army adage to see first, act first, and finish decisively he would have

forfeited the Division's tempo at great cost to his formation.

Army doctrine should stress that tempo is a crucial asymmetric advantage of US

forces and tactical commanders must be prepared to operate at a tempo that frequently

prevents the development of intelligence necessary to conduct a deliberate attack. For this

reason, both Field Manual 3-0, *Operations,* and Field Manual 3-90*, Tactics,* must explicitly state that the movement to contact is the most common type of offensive operation. Brigade and battalion level deliberate attacks against known, templated enemy positions may still occur but they will be extremely rare and will only take place at the initial outset of a campaign. Training scenarios at the Combat Training Centers and mission essential task list development should reflect this reality. Tactical scenarios should force commanders to act with little or no information about the enemy to their front. They must train to develop critical combat information on the move, understand that information, adjust their plan accordingly and defeat the enemy through dislocation.

Constructive simulations like Warfighter must also change to reflect the real problems of battlefield density. Large portions of the enemy will often remain practically invisible to even the most aggressive surveillance effort, particularly in heavily urban areas. Commanders must be prepared to attack into uncertainty and then react as the picture becomes clearer. Failing to advance in the face of this uncertainty poses a great risk to our military advantage.

<u>The Failure of Iconology</u>

Future enemies have certainly learned from the experiences of the Iraqi military in the last two wars. If a BMP is easily destroyed at two kilometers but a pickup truck with an RPG can infiltrate to within 100 meters of a US tank company, it makes little sense to continue to build battalions of BMPs. We can expect that future conventional enemies will attempt to blend in with the local population by employing forces in civilian clothing and mounted in commercial vehicles. As American UAVs proliferate on the future battlefield the importance of "blending in" will grow. Adversaries will seek ways

to deceive our surveillance systems by avoiding detection or by becoming indistinguishable from the increasingly cluttered environment in which they operate. Because American military might is so effective at destroying the red icon, the enemy will go to great lengths to avoid becoming one. Battlefield density will increase and finding the enemy through observation alone will become increasingly difficult.

<div align="center">Reconnaissance is a Combat Operation</div>

Lightly armored scouts survive on the battlefield by trading armor for stealth. Stealth requires time and this is the one luxury that tactical commanders can expect to do without in the future. Future conflicts will almost certainly occur above the threshold that allows for stealthy reconnaissance. Additionally, the evolving nature of the threat will make that passive reconnaissance less and less useful. If the enemy looks just like the population he is hiding among, then observing him from a distance reveals little information of use to a maneuver commander.

Effective reconnaissance in the future will almost certainly require fighting. Ultimately, someone must go forward into the unknown and make contact with the enemy. If that element possesses the combat power to survive that contact and the flexibility to react, tactical commanders can sustain the tempo advantage, understand the enemy based on his actions and react faster than the threat. This will be the key to victory on the future battlefield.

<div align="center">Recommendations for Change</div>

If fighting will be an integral part of future reconnaissance operations, our scout formations at the battalion and brigade level are woefully unprepared for it. The Army should remove the remaining HMMWVs from the battalion scout platoons and from the

reconnaissance troops of the armed reconnaissance squadron. We have seen the futility of placing lightly armored scouts in heavy units in the last two wars. We should not wait to learn this lesson a third time. These platforms should be replaced with M2s, M3s, or another platform that is survivable against both the RPG and the recoilless rifle. Perhaps the up-armored HMMWV may one day meet this survivability standard.

The LRASS has consistently proven its worth in combat and should be an integral part of future reconnaissance units. The Armor Center should look at ways to mount this system on the M3 in lieu of the missile launcher. Several technical limitations exist in fitting the LRASS onto the Bradley chassis, but these can be overcome with the proper investment of energy and expertise.

For a reconnaissance unit to operate beyond the supporting range of the force that it is conducting reconnaissance for, it must possess heavy armor. Equipped with only HMMWVs and M3s, the armed reconnaissance squadron lacks this capability and is therefore, closely tethered to brigade combat team it supports. This will likely be a serious limitation just like the lack of armor in the 81st Armored Reconnaissance Squadron hampered its reconnaissance capability in North Africa in 1943. With this in mind, the Army should equip each of the ground troops in the heavy armed reconnaissance squadrons with an M1 Abrams tank platoon. This will provide the squadron with sufficient armor protection to operate beyond the supporting range of its main body.

The Army has a historical tendency to accept force design changes that appear feasible so long as they meet a pre-established budgetary and fiscal constraint. Rather than selecting the best possible force, we tend to select any option that meets minimum

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acceptability criteria but achieves fiscal goals. In the 1980's and 1990's, the Goldsmith studies at the NTC made a compelling case for the feasibility of lightly armed reconnaissance platoons. Because this recommendation yielded significant savings in maintenance and procurement costs, it generated an irresistible momentum that quickly overwhelmed competing historical arguments about the failure of reconnaissance jeeps in World War II. Despite the overwhelming evidence from Operation Iraqi Freedom, the Army is in the danger of making the same mistake again. A general shortage of tanks and Bradleys would be the worst possible reason to deny our reconnaissance formations with the equipment that they need to accomplish their mission and survive on the battlefield. The reconnaissance system is simply too important to serve as the 'bill-payer' for other military initiatives.

<div align="center">Proposals for Future Research</div>

Effective research often raises more questions than it answers. The first draft of history has barely been written on the invasion of Iraq and subsequent drafts will undoubtedly shed a different light on events in that conflict. This research has conclusively shown that close combat is an essential component of effective reconnaissance, yet it does not clearly identify what balance of reconnaissance assets will be required on the future battlefield. Clearly, aerial surveillance platforms will have a role in the future. Where will these platforms be most effective and what is the proper balance between aerial surveillance and armored ground reconnaissance? These important questions require further examination in subsequent research.

The whole concept of 'iconology' expressed by some commanders in their interviews is another significant area that demands further investigation. Are we entering

an age in the advancement of military technology where uniquely configured, centrally procured weapons platforms are becoming anachronisms? Will US precision strike capability make the civilian saboteur far more effective than the uniformed enemy soldier? If this is the case, then our methods and organizations must change dramatically. If the sermon preached in the mosque of a particular town has far more military significance than the number of tanks in that town, then our current tactical reconnaissance forces are woefully unprepared for this type of intelligence collection. How do we template an enemy that derives its power from ideology and commercially available tools of violence rather than one based on the power of the state? Will the scout of tomorrow look more like the spy of today? This possibility demands significant research and a thorough examination of the legal parameters associated with conventional military forces.

Summary

Two centuries ago Carl von Clausewitz described the tension between the theoretical possibilities suggested by the limits and capabilities of our weapons (war on paper) and the hard realities of real warfare. This tension continues today. The way in which the US Army of the future handles the uncertainty and the fog of war lies at the very heart and soul of the transformation effort. Surveillance technologies and the sophisticated information processing capabilities of modern computer networks offer great promise to dramatically revolutionize the way that tactical commanders leverage information on the battlefield. As with all technological innovations, there is a danger of learning the wrong lessons. Simplistic assumptions about the ability of units to slow and accelerate the tempo of their operation based on their need for reconnaissance has

contributed to the flawed idea that future commanders will see first and then act. Operation Iraqi Freedom has revealed the danger of this assumption. Despite having access to the most robust constellation of surveillance platforms ever assembled, battalion and brigade commanders uniformly agreed that they rarely knew what was in front of them. Rather than waiting to see and understand the enemy, they attacked anyway. Failing to do so would forfeit the greatest asymmetric advantage of US forces. Some may argue that future improvements in technology will fix this problem. This prediction, however, is suspect. No commander interviewed said that he would have been able to transition from a movement to contact to a deliberate attack if he had only had another satellite image. On the contrary, commanders were often inundated with this type of information and found it irrelevant. The enemy simply would not fit any template. His capability and intent were not discernible through observation from a distance. To understand the enemy, units had to go out and meet him on the ground. Effective reconnaissance that allowed a commander to visualize the enemy was almost always a combat operation. In Operation Iraqi Freedom, the Army relearned the lessons of World War II, Korea, and Operation Desert Storm. Useful battlefield information could only be acquired by fighting for it.

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